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P A P E R S

I N

A G R I C U L T U R E.

A G R I C U L T U R E .

THE GOLD MEDAL, being the Premium offered for Acorns, was this year adjudged to JOHN MORSE, Esq. of Norwich, from whom the following Letter and Certificate were received.

THIS is to certify, That John Morse, of Norwich, Esq. had twenty-five acres of land, all well fenced, in the parish of Sprowston, in the county of Norfolk, set with Acorns, between the months of October 1788 and March 1789, for the purpose of raising Timber and Underwood : the plants are healthy and vigorous ; and there

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are more than three hundred upon each
acre.

JOHN MORSE, Norwich.

WILLIAM FOX, Sprowston.

EDWARD DAVY, Churchwarden.

THO^s CHAMBERLAIN, Overseer.

JOHN GAPP, Curate of Sprowston.

October 26th, 1789.

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S I R,

THE twenty-five acres I had set with
Acorns last spring, are of various soils.

Six acres were arable land, of a good loamy soil, approaching to brick earth; were set with Acorns, in rows at six feet distance, in furrows, and ploughed in with wheat, with no other trees intermixed.

The remaining nineteen acres were heath land: the soil differs; part rich good loam, some sandy, and some gravel. This land was set in rows, at six feet distance, three rows of Acorns and one row of Scotch firs, in order to nurse up the Oaks.

I am, SIR,
Your humble servant,
JOHN MORSE.

*Norwich,
December 31, 1789.*

Mr. MORE.

B 3

The

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THE GOLD MEDAL, being the Premium offered for planting Chesnuts, was this year adjudged to Mr. JOSEPH COWLISHAW, from whom the following Letters and Certificates were received.

S I R,

I HAVE planted six acres of land, on Carlton Forest, with Spanish Chesnuts: the number of Trees on each acre is more than twelve hundred, and as many Larches.

The soil is sandy, and sown with a quantity of Acorns and Ash Keys. A verge, six yards broad, on two sides is filled with a variety of Forest-trees, twelve or fourteen fots.

The six acres were well fallowed in 1788. In March 1789, I opened furrows at about
six

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six feet asunder, wherein were sown twenty bushels of Acorns ; and twelve bushels of Ash Keys, broad-cast. Between the drills of Acorns are planted seven thousand six hundred and fifty-six Spanish Chestnuts, one-year-old seedlings ; and the same number of Larches, two years old, transplanted at two feet nine inches distance. They are so planted, that when the Larches are taken out, the Chestnuts will stand at six feet distance. The verge on two sides, six yards wide, and three hundred yards long, is filled with Oaks, Spanish Chestnuts, Larches, Limes, Acacias, Berry-bearing Poplars, Caledonian Laburnum, Lord Middleton's Oak, Spruce Firs, Scotch Firs, Balm-of-Gilead Firs, Weymouth Pines, Birches, Mountain Ash, and Arbor Vitæ, one in a yard. Few of the plants have failed : every dead tree has been replaced this autumn. The Chestnuts, Oaks, and Larches, seem to do well. The Ash Keys, which were of last year's growth, do not yet appear. It is my intention to make this planting a thick underwood ;

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and the Chesnuts and Oaks to remain for timber.

I am, SIR,
The Society's and your
very humble servant,

JOSEPH COWLISHAW.

Hodsock-Park.
26 October, 1789.

Mr. MORE.

THIS certifieth that we, whose names are underwritten, have viewed the above-mentioned planting, and believe the account to be a true one, being effectually fenced and secured to grow timber.

ROBERT RAMSDEN, of Carlton-Hall.

T. HUME, Rector of Carlton.

IN a subsequent Letter, Mr. Cowlishaw says he has added to the variety round the outfides, Alders, Cherries, Horse-Chesnuts, Crab-trees, Balsam-Poplar, Box-trees, Witch Elms, Silver Firs, American Firs, Spruce Firs, Plane-trees, Laurels, and one thousand Sallows.

The

The GOLD MEDAL, being the Premium offered for planting Elm, was this year adjudged to RICHARD SLATER MILNES, Esq. of Foyston, near Ferrybridge, Yorkshire, for having planted, agreeably to the following Certificate, twenty thousand English Elms.

And the GOLD MEDAL was also adjudged to the same Gentleman, for having planted upwards of two hundred thousand Larch-trees, as appears by the following Certificates and Letters.

S I R,

AS I was too late in my application last year for the Medal for planting the greatest quantity of Larch, I must again trouble you with an account of what I have planted this year, and request you will be so good as to present to the Society the enclosed Certificates.

The

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The ground I have planted is of the most barren kind; notwithstanding which, I have the satisfaction to find that the Trees grow very well. They are planted a yard asunder, about two thousand Larch on an acre, the others mixed Forest-trees. The plantations are all well fenced. If you wish to be informed of any other particular, I beg leave to refer you to Mr. White, of Retford, who has undertaken all my planting.

I am, SIR,

Your most obedient humble servant,

RICHARD S. MILNES.

Foyston,

October 28, 1789.

MR. MORE.

I DO certify, That I have planted for Richard Slater Milnes, Esq. at Foyston, between the 24th of June 1788 and the 24th of June 1789, twenty thousand English Elms; and from the 24th of June 1788 to the 24th of June 1789, above two hundred

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dred thousand transplanted Larch, between two and four years old.

JAMES MANN.

Foylon,
October 28, 1789.

IT having been judged necessary to make some inquiry of Mr. White, relative to these plantations, the following answer was received from that Gentleman.

S I R,

I N answer to yours of the 13th, which I am just favoured with, I must acquaint you, that I contracted with Mr. Milnes for the planting two hundred and twenty-five acres of land with different trees ; and it was stipulated that there should be two thousand Larches on each acre. And as that kind of tree grows better on that soil than any other, and is a plant much esteemed by myself, and no less so by Mr. Milnes,

I

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I believe the full number has been faithfully planted; which will make the distance under five feet. The plantations were all made under my direction, the person James Mann, who signed the certificate, being my servant. They are all very well fenced, and very likely to make a timber-wood.

I have the pleasure to be,

S I R,

Your most obedient servant,

T H O M A S W H I T E .

Retford,

January 15, 1790.

M^r. M O R E .

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The SILVER MEDAL, being the second Premium offered for planting Larch, was adjudged to Mr. GEORGE WRIGHT, of Anston, from whom the following Certificates were received.

THIS is to certify, That Mr. George Wright, of Anston, has planted on his estate at Gildingwells, in the county of York, eleven thousand five hundred and seventy-three Larch-trees, in February 1789, at one yard distance, on a very uneven piece of ground, the stone being taken out for lime, &c. Very few of the plants failed. The plantation is effectually fenced and secured to grow timber.

Signed by us, { JOHN CLARK, Minister.
Nov. 2, 1789, { JOSEPH COWLISHAW.

SIR,

S I R,

I HAVE just now received yours ; and do hereby assure you, that I signed a Certificate, signifying that Mr. George Wright had planted on his estate at Gildingwells, in the county of York, eleven thousand five hundred and seventy-three Larch ; and I further assure you, that the said Larch-trees were two years old when planted, and from nine to fifteen inches high. The trees had been transplanted.

Your humble Servant,

JOHN CLARKE.

Ashton,
January 11th, 1790.

Mr. MORE.

The

The GOLD MEDAL, being the Premium offered for planting Ash, was this year adjudged to RICHARD Lord Bishop of LANDAFF, from whom the following Certificate and Letter had been received.

THIS is to certify, That, in the course of this year, I, with proper assistants, have planted for the Lord Bishop of Landaff, eleven acres with twenty thousand Ash plants, intermixed with three thousand two hundred Oaks, two thousand Elm, two thousand Beech, two thousand Sycamore, and six hundred and fifty Carolina Poplars : that all the said plants are at the least two years old ; and that they are planted in a field, on the Grove estate, near Amble-side, which is fenced with a new stone wall, six feet in height. Witness my hand,

Amble-side, THOMAS HARRISON,
November 3, 1788.

I believe the above to be true.

Witness, JOHN BENSON,
Steward to the Bishop of Landaff.

SIR,

S I R,

I CERTAINLY signed the Certificate you refer to, respecting the Bishop of Landaff's having planted twenty thousand Ash &c. in 1788. I am now able to inform you, that the fence of the plantation is kept up with the greatest care, and that the plants in general are in as thriving a condition as can be expected.

The Sycamore and the Oaks seem at present to be more promising, in this exposed situation, than the Elm; but the Ash, which was planted on a boggy soil, is the most promising of all. You will not be displeased at having some account of the Larches which were planted by his Lordship in the spring of 1788, and for which the Gold Medal was last year adjudged to him: they made good shoots in the following summer, but many thousands lost their tops the last year. We do not attribute this loss to the coldness of
the

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the preceding winter, but to the wetness of the spring and summer of 1789; for the Larches which were planted on the dry spots seem to have suffered far less than those whose roots were more exposed to the wet. The Scotch Firs, of which we planted near thirty thousand, seem to be better able to bear a wet soil than the Larches.

I am, SIR,

Your most obedient humble servant,

JOHN BENSON.

Dove-Nest,
February 9th, 1790.

Mr. MORE.

The Society, having offered their GOLD MEDAL, or Thirty Pounds, to the person who should discover the nature and cause of the Disease in the Potatoe-plant called the *Curled Potatoe*, and point out an effectual cure, received this year the three following Papers; and being desirous of encouraging every attempt to insure success in the culture of that valuable vegetable, divided the pecuniary Premium equally among the three candidates, Mr. WILLIAM HOLLINS, Mr. WILLIAM PITT, and Mr. JOHN HOLT; whose Accounts and Certificates follow.

S I R,

HEREWITH I have sent you an account of the disease called Curl Potatoe, with a Certificate which corroborates it, not doubting your Society will judge with liberality;

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rality ; and if the Society shall think it necessary for me to attend, shall be ready to do it.

I am, SIR,

Your obedient servant,

WILLIAM HOLLINS.

Berriew,

October 20, 1789.

Mr. MORE.

THE Curl in Potatoes is a disease which admits of three different stages or degrees.

1st. The Half-curl.

2d. The Curl.

3d. The Corrupted.

1st. The *Half-curved* plants have leaves somewhat long, and curled only in a moderate degree : they produce a tolerable crop, if the summer be not very dry ; but if

C 2 otherwise,

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otherwise, the Potatoes will be small and watery.

2d. The *Completely-curved* plants are seldom more than six or seven inches high: they soon ripen and die. The Potatoes are generally smaller than a nutmeg, of a rusty red colour, and unwholesome as food.

3d. The *Corrupted Potatoes*, or those in which the vegetative power is nearly destroyed, never appear above ground. The seed may be found, at Michaelmas, as fresh, to appearance, as when it was set, with a few small Potatoes close to it.

The first cause of the Curl in Potatoes must be traced to the manner in which the seed was raised the preceding year.

If the Potatoes be set late in the season, that is, from the middle of May to the middle of June, in a rich soil, well manured, having a southern aspect, and if the
summer

summer should be hot and dry till (we will suppose) the beginning of August, when the blow of the plants has fallen off, then the seed will be exhausted in feeding the plant only; and very few Potatoes will appear. Should the weather now become moist and genial, the plants, especially if they should be earthed, will blow afresh, and a plentiful crop of very large Potatoes may yet be produced.

These Potatoes are perfectly fit for use as food; but as they were produced from the stalk of the plant, after the seed itself was exhausted, they will be defective in moisture and vegetative power: and the plants which proceed from them the following year, will be found to be curled.

Second Cause.

The Curl may be produced without manure or earthing, provided the Potatoes be sown (at the end of May) thick together, in a rich soil, and covered with green fern,

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or other litter, before the plants appear. The rain rots the fern or litter, and enables it to penetrate as a manure to the roots; and the plants are forced, as in the preceding experiment, to a second growth, and blow. The seed thus raised produced plants that were curled.

The forcing Potatoes by cultivation, as above described, I find to be the cause of the Curl, both from my own experiments, repeated for several years successively, and also from the observations I have made upon the practice and ill success of my neighbours.

It is well known that the flowers of many plants, such as the poppy, the rose, and many others, are much altered by cultivation; they become *double*, the stamina are converted into petals, the generic character is lost, they become what botanists call Monsters; the parts of generation being changed, no seed is produced. If I may
be

be allowed to consider any part of a plant in which the vegetative power resides as a seed, it will be found that rich cultivation produces, if not absolutely the same, at least a similar imperfection in the Potatoe; for the flower and the bulbous root are both enlarged by cultivation. In the flower, little or no seed is produced: in the Potatoe, the vegetative power is impaired or destroyed, according to the degree of the disease.

It is observable that, wherever the vegetative power is impaired, there is always a deficiency of moisture; which confirms my opinion mentioned in page 21, and is itself proved by the following experiment.

Experiment.

Both healthy and curled plants may be raised from the same Potatoe, in the following manner:

Dig up, in the beginning of October, some Potatoes raised as is described in the

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preceding pages. Amongst the largest will be found some that have, in different parts, different degrees of moisture, the least at the butt, and the most at the crown end, the quantity of moisture gradually increasing from the butt to the crown. Take one set from the crown, and another from the butt: the former will produce an healthy, the latter a curled plant. The Curl-producing Potatoes are also observed to be drier both before and after boiling, and are boiled in a shorter time.

The Mode of preventing the Curl in Potatoes.

The following directions for cultivating Potatoes, duly observed, will effectually prevent the Curl; as I have found by various and repeated experiments, made with great care and attention, during these last seven years.

The best time of setting, is from the beginning of April to the middle of May.
Make

Make ridges a yard asunder : put your manure first into the trench, and with moderation : set the Potatoes in a triangular form, five or six inches asunder ; cover them with the soil to the thickness of five or six inches. There is but little danger of laying on too much of the soil : the deeper are the sets, the better will they be protected from the scorching heat of the sun, if the season should be dry. This distance of five or six inches is so small as to prevent the plants growing too rank, and yet sufficient for each of them to be exposed to the sun and the air.

2dly. When they have grown to the height of six or seven inches above the ground, you must not earth them, as is the usual practice. You must take away the weeds, and may draw a little mould to them ; but you must be careful to do it before the blossom - buds appear, which time is generally about the end of June.

They

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They will now require no farther care, excepting that of weeding.

I am of opinion that early setting is advantageous, on account of the greater chance of early rain, which will be very beneficial to the plants if the summer should be dry. By this process, the plants will be healthy; the young Potatoes will be formed in due season; they will grow gradually; the plant will ripen and die in due time, and will not be forced into a second growth by the rain which may fall in September. The sap being thus left in the Potatoe, it becomes a *seed* endued with an unimpaired perfect vegetative power; and the plants which are raised from them will be found to be entirely free from the Curl.

N.B. The Potatoes may be dug as soon as they can be handled without crushing the peel, that is, about the end of September.

Sound

Sound Potatoes are procured with the greatest certainty from earth that has been peeled and burnt : the soil thus prepared is well suited to the growth of Potatoes. In this they grow gradually, and are not forced beyond their natural size : in doubtful seed, it is safest to plant the smallest Potatoes *whole*.

The soil the most likely to produce the Curl, is that which is rich in itself, much manured, and has a southern aspect. In other situations, where the soil is not rich, and the garden is cold, either from its being upon the side of a hill, or exposed to the north, the Curl has not yet appeared ; which is known to be the case in the mountainous parts of Radnorshire and Montgomeryshire. This is perfectly consonant with my theory ; for where the soil is poor, and the situation cold, the plants cannot be forced into a second growth by earthing and manure.

I do

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I do not mean to dissuade those who are anxious to raise large crops for immediate use, from earthing and manuring to the utmost extent ; I only caution them against using Potatoes so raised, for seed. By earthing and manuring, you will doubtless raise large crops of large Potatoes perfectly good, as food, but imperfect as seed ; for the vegetative power will be impaired by this forcing cultivation. Hence it will be the interest of every prudent cultivator, to allot a portion of his Potatoe-garden to the raising of Seed-Potatoes. If the directions which I have given be followed, I have not the least doubt of success ; at least I am certain that the Curl will not make its appearance.

T•

To the Honourable the President, Vice-Presidents, and Members, of the Society for the Encouragement of Arts, Manufactures, and Commerce.

WE, whose names are hereunto subscribed, have for many years last past bought our Seed-Potatoes from William Hollins, of the township of Heel, in the parish of Berriew, in the county of Montgomery, gardener; and do hereby certify, that the crops arising therefrom have, from time to time, grown up sound and good, and free from Curl: but if we at any time happened to keep seed therefrom of our own cultivation, which we severally attempted, the crops, after the first, second, or third sowing, would get curled and unsound (in common with those of our neighbours who did not happen to purchase their seed from him), to our great detriment and loss, and to the loss of the neighbourhood
in

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in general. Witness our hands, this 16th
day of October, 1789,

J. JONES, Justice of the Peace for the
County of Montgomery.

ROB. WILLIAMS, Minister of Berriew.

JOHN DAVIES, Church-warden.

RICH. PRYCE, Vestry-clerk.

And seventeen Farmers and Inhabitants
of the neighbourhood.

SIR,

S I R,

I TAKE the liberty of troubling the Society with my experience on the culture of Potatoes, in answer to their following proposal.

“ For discovering the cause, and pointing out the cure of Curl in Potatoes, verified by experiments, the Gold Medal, or Thirty Pounds.”

Having been a grower of Potatoes upon a considerable scale, for these ten years, I write wholly from experience: my annual growth has generally been from five hundred to one thousand bushels. I have frequently had a few curled, but not for several years, unless I planted curled sorts in small quantities, on purpose for observation.—The Curl in Potatoes is doubtless owing to a degeneracy in the seed; to the particular species, or variety, being worn out; by too great a
fameness,

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famenefs, and too long planting on the fame fort of land : and this degeneracy is by no means peculiar to the Potatoe ; every known plant, and perhaps even animal, is fubject to a fimilar degeneracy. Wheat, fown too long on the fame fpot, without changing the feed, will generally become fmutt and hen-corn. I have known barley, by being fown nine or ten years on the fame kind of foil, degenerate to the lightnefs of oats ; and oats, from the fame caufe, become little more than hufk and chaff. Peas, too long fown without change, ripen later, and become fo unkindly, that the pods, on the upper part of the haulm, never fill. To continue the fame idea, and apply it in an inftance or two to the animal creation, I have known a good breed of hogs, by repetition of breeding male and female from the fame farrow, become fo rickety, that they could not be reared ; and have very credible accounts of the fame effects taking place in
the

the human species, by confining intermarriages to two or three families for generations.

I hope this digression will be excused, as tending to illustrate the main subject, by making the cause of the disorder, in question, apparent.

The cure, I have no doubt, consists in planting sorts that have hitherto retained their health and their perfection (and many such sorts there are; fresh varieties are annually raised, and may be multiplied almost to infinity, by sowing the Bell or natural seed of the Potatoe): and indeed it is the duty, as well as interest of every cultivator, whether of Potatoes, or any other vegetable, to cure his seed from as perfect a plant as possible, and by no means to use the seed of a worn out, degenerate plant.

I have never understood, that the Curl in Potatoes has been, in this country, by
D any

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any means formidable to the attentive cultivator. No one in their senses would plant a degenerate sort but upon a narrow scale, nor indeed is there the least occasion ; for the bounty of nature has always at hand plenty of substitutes, equal or superior in quality to former sorts, even when they were in perfection. The varieties that I have known fail by curling, in this country, are only three : their provincial names are, first, an early sort, called here, Pretty Bettys ; in lieu of which are introduced Champions and Golden Balls, both excellent early sorts : secondly and thirdly, the old Winter Reds, and Pink Eyes, have both failed, and we have, instead of them, Aylesbury Whites, the Cluster Potatoe, the Ox Noble, red and white Surinam for cattle ; a dark purple kind, called by some, the Pomegranate Potatoe ; and many other valuable sorts, which never have yet curled. The rational remedy therefore, undoubtedly, is the raising and introducing of fresh varieties ; a practice which has never yet been interrupted by any difficulty.

Whether

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Whether any thing herein does or does not meet the wishes and views of the Society, they and the public are welcome to my trouble, who am,

SIR,

Your very humble servant,

WILLIAM PITT.

*Pendeford, near Wolverhampton, Staffordshire,
October 20th, 1789.*

Mr. MORE.

ON the cause and prevention of the Curl in Potatoes, I beg leave to offer the following thoughts, being a subject of no small importance to the farmer, and to which I have paid not a little attention.

The cause of this disease, as far as I can judge, does not arise from peculiarity of soil, variety of manure, difference of season (dry or moist) : the cause therefore, whatever it may be, it should seem, originates from the set, which, when once infected, I imagine, is incurable ; and the disease or curl appears to be nothing more than a total degeneracy of the plant, by being worn out, through want of change of seed, upon the same soil, with probably some other causes co-operating.

It is a well-known fact to every experienced farmer, that almost every species of grain and vegetables require repeated renewal,
or

or change from different soils ; or they wear out (as the phrase is), yield but imperfect crops, if continued too long ; and defeat the cultivator in his expectations of reaping benefit. Why may not this too cause the same effect in Potatoes, by their being too repeatedly planted, and occasion the blasted, early-matured appearance of the stems, which is always followed by a failure of crop.

In confirmation of the above theory, this district, for some years, suffered great injury from curled potatoes. As the disease had but then lately made its appearance, the cultivators were at a loss for a remedy.— This was obtained by totally discarding their former seed-plants ; and of late years, large quantities have been annually imported from Scotland.

This practice has been attended with success : few crops, I believe, I may venture to say, none, has been infected with the disease, if renewed ; but if the same seed

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was imprudently, for a few years, continued upon the same soil, some plants would appear infected ; and if still continued longer, the disease, instead of being *partial*, would soon become *total*, with few exceptions. The custom now is, to import every year from Scotland.*

There may be other reasons, which cause a degeneracy or wearing out of the plant.— Every seed has its peculiar season, when it is most proper to be committed to the earth. In some, the budding of certain plants, or the blowing of flowers, indicate this precise moment to the attentive cultivator : the month, or even the day of the month, is his only guide in others. To a few of these, the most favorable time is very limited, so very limited, that the winter

* Since writing the above, I have been well informed, that the sets obtained from moss lands, will make a sufficient change ; and that it is universally the practice of those who live in the neighbourhood of moss lands, to procure their Seed-Potatoes from thence ; and that this change of soil preserves them from the Curl.

ter turnep will not (in this district) yield a crop, if its seed be not sown within a very few days before or after the 20th of July ; but better, if five days before this period, than the same number of days afterwards. From the 20th of March to the end of April, is a proper season for planting most of the kinds of the winter potatoe : but this root, the friend, and great support of the labouring man, is not so very shy of her favours ; productive crops have been obtained, when planted even in July.—Time, however, for acquiring sufficient maturity, is not allowed from such late planting ; for the crop, though productive, is not perfect, being neither so solid, nor palatable ; and this may be one cause of accelerating a decay, or bringing on the Curl.

The Potatoe is also liable to other disorders : in very dry seasons, excrescences will arise, vulgarly called the Scab ; in moist seasons, little holes or cavities appear,

called the Canker, and both these disorders increase according to the length of time they remain in the earth, after having acquired maturity. It is more than probable, that these disorders may hasten the decay, and cause the Curl.

One method of preventing the disease, namely, by changing the seed, has been already mentioned: another source of prevention offers, from raising new kinds from the seed or apple of the plant, or the same kinds renewed again from the seed. Raising new kinds from seed, however, requires no small portion of discernment; for the seed from the same plant, will produce so many varieties, that it requires nice judgment of the cultivator properly to select. Great numbers, from inspection only, will be weeded out and rejected; and of those retained, more will be again rejected, the succeeding and following years: of the remaining few, there may different characters still exist; such as ill or well flavoured,
close

close or coarse grained, productive, non-productive, &c. &c. Each may have their respective value : but I think it may be generally asserted, that the finer kinds sooner degenerate ; the coarse kinds, which are almost, if not always, more productive, retain their vigour the longest. The following example confirms this opinion.

Spring, 1785.—I procured a new kind of Potatoo, called a DABB, lately raised from seed ; where, I know not : the character of which

* This may have been the reason the disorder did not appear before the introduction of new kinds ; for it has been observed, that the old Winter Red never curled. Refinements of every sort have their advantages and disadvantages. By the introduction of new kinds, we obtained superior Potatoes, but more liable to decay : and yet the superior qualities of the new, it is likely, would supersede the cultivation of the old Winter Red ; probably a coarse species, but well thought of, when there were no better sorts.

I have been told that a valuable apple for cyder is worn out ; nor can all the efforts of the cultivator renew it from grafting. If this be a fact, there seems a striking analogy in the decay of each, from too long planting on the same soil, and it requires the industry and ingenuity of man, to seek out fresh stocks from the first source, Seed.

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which was, large, coarse grained, strong flavoured, and of course rejected from the table; but being very productive, was useful for cattle. The last year, it was so much improved, as to be no longer rejected : it still retains the quality of being productive, even so much as yielding, this present year, six bushels from every statute perch. It should be observed, that the present very luxuriant crop may be in great measure owing to having been planted on a virgin soil, which was never before improved, or broken up ; very little dung was used. Here is an evident change for the better ; the plants are vigorous, and there is at present no appearance of decay : this new soil may be a means of preserving the plant a few years longer ; but a total change of seed will, in time, become absolutely necessary.

Hence it should appear, that although the disease, after the present stock has been, to a certain degree, infected, can never be cured, yet means may be taken for prevention : and that this is the case in this district,

strict, is evident ; few crops, of late years, having failed, by being much infected with this disorder ; for, wherever the Curl has appeared, in ever so small a degree, that stock has been rejected by the attentive cultivator, and new seed obtained.

It was so late as the year 1565, when the Potatoe was first imported from its native soil, *America*, into Ireland ; and afterwards (owing, as is reported, to a shipwreck) they were planted upon the sea-coast in Lancashire, from whence their cultivation has been progressive, from the west, through every part of the kingdom ; in some of which but very lately. It is also imagined, that this disease first appeared in this very district of the kingdom wherein they were first cultivated ; and this happened about the year 1764 : a remarkable circumstance at which time, I yet well remember. A person, full of enterprise, observing the Curl in a few stems of a certain crop, and that they at the same time decayed,

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decayed, or arrived at maturity sooner than the rest, had them carefully selected out, imagining he had luckily obtained, somehow, a new and early kind; and had all of them planted the next season: that he was disappointed of his succeeding crop, was evident; but from what cause, he was puzzled.

I am the more encouraged to offer you these hints, for that, after having drawn them up, in the manner here sent, I read them over to a very intelligent farmer in this neighbourhood, who said that these thoughts totally corresponded with his own. I have shewn them also to a respectable clergyman, who, to his other many excellent qualities, is always ready to communicate information, and has favoured me with the following extract from a private letter.

“ A labouring man in my neighbourhood
“ has got a very good Potatoe: the only fault
“ is, that out of four plants, three of them
are

“ are abominably curled ; on which account,
 “ I desired he would give me four Potatoes.
 “ From each Potatoe I took a *shoot*, not
 “ a *set*, in order to see if the shoots would
 “ be curled ; they were not : so, possibly
 “ their not being curled may be accidental,
 “ or possibly the curl may arise from the
 “ *set* planted. Another year, I will plant a
 “ dozen, or more, of these Potatoe-shoots :
 “ then, if there should be no curl, I shall
 “ be clearly of opinion, that the curl arises
 “ from some disease in the *set*. What I mean
 “ by a shoot, is—I put three or four sets into
 “ a flower-pot ; when they have shot to be
 “ about two inches high, and have fibres,
 “ I take the sets up, and, with a knife, cut
 “ the shoots off, leaving not the least piece
 “ of a set on the shoot. I then plant the
 “ shoots.

“ S. H.”

Hurfeley,
 22d July, 1789.

It should appear, from the above ingenious experiment, of which future trials will confute or confirm the fact, that it corroborates the above theory, by proving the disease in
 the

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the fet; and which, when the cause or seat of disorder is lopped away, the cure is effected by the force of nature to heal itself, and the power of vegetation on the small fibres, which retain newly-acquired life, though from an infected parent stock.

The nature of vegetation is so mysterious, that we must acknowledge our ignorance in her wonderful process. We know that many varieties of fruits may, by a single bud of each, be inoculated upon one and the same single stock; and that, from this *one* root or fountain-head, may be obtained the different fruits therein deposited: but by what law of attraction or repulsion, this common stock or parent can divide, assimilate, correct and adjust, the different particles of matter of which each fruit is distinguished, by shape and flavour, is beyond our reach to know. It is true, that but a very small part of the food of plants or fruits is filtered through the roots of the plants: the leaves, the bark, the wood, imbibe

imbibe from the atmosphere, and perform their task ; but being of different shape, texture, and grain, each has its separate and particular mode of operation, and thereby causes different effects. Nor yet are we able to say, what it may be, that gives the different flavours to fruit ; whether from the component particles of matter differently arranged, or whether from the separate and component parts being of different shapes, &c. &c. These are *secrets* hitherto withheld, and probably ever will be hid from the search of man.

I am, SIR,

Your obedient servant,

JOHN HOLT.

*Walton, near Liverpool,
October 26th, 1789.*

MR. MORE.

The

The following Letter and Certificates having been received, the pecuniary reward (TWENTY GUINEAS), agreeably to his own choice, was adjudged to Mr. PRES-GRAVE, of Bourn in Lincolnshire.

SIR,

IT is in consequence of the abstract of premiums offered by the Society for the Encouragement of Arts, Manufactures, and Commerce, for the year 1788, that I apply to you at present, claiming the reward of twenty guineas, for cultivating, in that year, not less than four acres of Potatoes, for the sole purpose of feeding cattle and sheep.

I shall give you a fair and candid account of the whole matter, which, I believe, your Society always wish to have.

About four years since, having heard of a few beasts that were fattened with Potatoes,

toes, some miles from me, I was induced to try the experiment, and planted an acre : the following year, I increased the quantity to four acres ; and last year, to eight acres and fifteen perches, as you will find by the Certificate sent you with this. I increased my number of stalls, and other conveniences for fattening, to twice the number I had before : and during the last winter, I fattened nineteen beasts with Potatoes and Hay ; part of which were sold in Smithfield, and part in our own markets : and I shall enclose you Mr. Ireland's account of seven of those beasts, that he sold at Smithfield, at one market. I have about the same quantity of acres planted with Potatoes this year ; and I certainly shall continue this practice, so long as I cultivate the soil here.

The farm on which I plant the Potatoes, is in Deeping Fen : it is a black, moorish, and fenny soil, and none of it worth (nor does cost me) ten shillings an acre each year : and from this you will

E justly

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justly conclude, that it is the Potatoes, and not the hay, that fattens the cattle. The soil above mentioned is not so favourable to the production of Potatoes, as when mixed with loam : this I have proved by experience ; for, in casting our ditches, we throw out a loam and clay : these I spread on the soil ; and I find it increases the produce very much indeed.

Three boys and one man are equal to the planting for one plough : every third furrow is planted ; and the work goes on regular, so much so, that the planters do not stop for the plough, nor the plough for the planters.

Expences on each acre, as under.

	£.	s.	d.
Quantity for setting an acre, 15			
busshels, at 1s. - - - -	0	15	0
Cutting - - - - -	0	1	0
Rent - - - - -	0	10	0
	<hr/>		
Carried over	£. 1	6	0

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Brought forward £. 1 6 0

Ploughing (no order necessary, as I set them on light, stubble land)	-	-	-	-	0	3	0
Planting	-	-	-	-	-	0	4
Hand-hoeing	-	-	-	-	-	0	5
Dressing up with a plough twice					0	4	0
Throwing up and gathering	-				0	5	0
							£. 2 7 0

Produce, two hundred and fifty bushels
on each acre.

When these are gathered, I lay them in a long ridge, near to my bullock stalls, about six feet broad at the bottom, and about four feet deep, bringing them to a point at the top. I then cover them with dry straw. A trench then is made, about five feet broad, and one foot deep, round the heap. We cover the Potatoes with the earth, beginning at the bottom, and covering it upwards till the whole is covered, a foot

E 2
thick.

thick. This method not only keeps out the frost, but the rain ; and is by much the best way of preserving them, as I have not had the least damage from the frosts or rain when thus covered. The method of feeding as follows.

The first thing my bailiff does in the morning, is to give to each about a peck and a quarter of potatoes (rather more or less, according to the size of the cattle), which they eat with great avidity : then to each is given a small quantity of hay : about twelve o'clock, to each is given about three gallons of water, and then potatoes and hay as before ; the same again at night, which is three times a day of hay and potatoes, and only once of water.

The Potatoes are given as they come from the heap, without the least washing, or even cleaning (which I think the best method). A bushel a day is better than a greater quantity for an ox of fifty stone, and rather more

or

or less, agreeably to the weight of the cattle. I do not approve of letting water stand by them with this food, nor giving it to them more than once a day. I give them food from doors, in the face of the cattle, and never go into their stalls, but to clear away their dung ; yet I make it an invariable rule, never to feed them, when more are at rest than are standing, as I think it better to let nine wait for their food, than to disturb ten that are at rest.

I breed up about thirty young beasts every year, and contrive to have from fifteen to twenty heifers with calf every year ; and as they calve, I purchase other calves, so as to give to every one a calf more than her own. Thus from fifteen heifers I breed thirty calves (each rearing two), and by this means keep up my breed and stock. I had thirty of these the beginning of last winter : all of them caught some disease, which reduced them very much, and four of them died.

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I fed fourteen of the weakest of these, in the field, on Potatoes, till January last, when they were so much improved, that I struck off their Potatoes, and gave Potatoes to the other thirteen ; which brought them all round, and they were in high condition in the spring.

I cannot say I have made much trial with my sheep ; but I intend to fatten some entirely on Potatoes this year, and have not the least doubt of success, as some lambs I had at turneps, would leave them for Potatoes, and eat them with astonishing avidity.

Annexed to this, I trouble you with three Certificates : the first is the Surveyor's, the second is my bailiff's, or head servant ; and the third from Mr. Stewart, a surgeon of great reputation in this country. Should any further information be requested, I shall be exceedingly happy to communicate
any

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any thing to the Society, that they may have a wish to be informed of.

I am, SIR,

Your most obedient servant,

EDWARD PRESGRAVE.

Bourn, Lincolnshire,

Nov. 1st, 1789.

Mr. MORE.

I HEREBY certify, That I surveyed eight acres fifteen perches of land, which were cultivated with Potatoes in 1788 on Mr. Presgrave's farm, in Deeping Fen, Bourn, Lincolnshire.

GILBERT YOUNG, Surveyor.

Oct. 30th, 1789.

I DO hereby certify, That I have carefully read the foregoing account by Mr. Edward Presgrave, of his cultivating Potatoes

E 4 in

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in the year 1788, for the sole purpose of feeding cattle and sheep; and that, to my knowledge, it is true in all respects, being his bailiff, or head servant, residing on the farm, and under whose charge his cattle are; and that I fed the cattle, mentioned in the letter, daily with my own hands.

GEORGE HARBY.

*Deeping Fen,
Oct. 31st, 1789.*

I AM perfectly satisfied that the account of Mr. Presgrave, respecting the cultivation of Potatoes, for the sole purpose of feeding cattle, is strictly true, as I have been repeatedly upon his farm at the time of their growing, and have likewise seen the cattle feeding upon them.

R. STEWART, Surgeon.

*Bourn, Lincolnshire,
Nov. 1st, 1789.*

SIR,

S I R,

I SHOULD have answered your letter sooner, had not illness prevented me. I signed a Certificate for Mr. Edward Presgrave. The peculiar method of feeding the cattle upon Potatoes, unwashed or boiled, gained my attention so much, that I frequently visited the stalls where the beasts were feeding.

Your most obedient humble servant,

R. STEWART.

Bourn,
Dec. 22d, 1789.

Mr. MORE.

Account of seven beasts sold for Mr. Presgrave, April 17th, 1789.

One, Mellish	-	-	-	18	10	0
One, Wood	-	-	-	17	0	0
				<hr/>		
Carried over	£.	35	10	0		

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Brought forward				£.	35	10	0
One, Stennett	-	-	-	16	0	0	
One, Linders	-	-	-	13	10	0	
One, Maylin	-	-	-	14	10	0	
One, Hembrow	-	-	-	13	15	0	
One sent to be killed	-	-	-	12	19	0	
Total				£.	106	4	0

(Signed) ROBERT IRELAND.

*West Smithfield,
London.*

The

The SILVER MEDAL and TEN GUINEAS, being the Premium offered for Stall-feeding Horses, was this year adjudged to Mr. THOMAS NOYES, of Park Farm, near Eltham; from whom the following Account was received.

MY LORD,

FROM my having been informed of a premium being offered, by the Society for the Encouragement of Arts, Manufactures, and Commerce, this year, to those who have raised a proper quantity of green food, for the support of their horses, &c. during the summer months, I beg leave to put in my claim thereto.

I take the liberty to mention, that I have lived above twenty years upon a farm, in Hampshire, of near one thousand acres, on
the

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the estate of William Man Godschall, Esq. of Weston House, near Guildford in Surry; upon which I have fixed my eldest son, and have been, for some few years past, settled upon this farm, which is about two hundred and seventy acres, the property of Lady James.

Having found from experience the great utility of green food, in the summer, to feed the horses used in husbandry, and save both corn and hay; I sowed last spring about nine acres of tares in drills; and also, by way of trying the difference, about five or six acres in the broad-cast way; the old method, which, till of late, I generally used to follow.

The tares sown in the drill way, I found to turn out much superior to those sown broad-cast; the crop being greater, though the seed was only about half the quantity.

The

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The produce of these tares was so great, as to enable me to feed all my Draught Horses, to the number of twelve, and sometimes thirteen, during part of the spring, and all the summer season, (in all, I consider about four months, from May to October), upon this food wholly, except some few beans and bran, when they worked hard. ' This was the case, when they ploughed some of the very strong, heavy clay land, which required from six to eight horses, when, in other parts, three or four would do as well: and in my other farm, where the land was thin and light, two horses would perform as well as six will in some parts here. Besides the horses, there were five milch cows, and a bull, fed with these vetches or tares in the farm yard.

The dung hereby produced and preserved for manure, was of course very abundant, and useful to me; much more so than had the dung been dropped by the cattle in the fields,

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fields; as in that case the virtue would have been in a great degree exhaled by the sun; and in particular places, where it was dropped in heaps, and not spread, it would have done more harm than good.

Besides, when the cattle are suffered to tread in the crop they feed upon, they often destroy more by treading, than they consume by feeding. The milk of the cows is also increased greatly in quantity, by being so fed, and turned out morning and evening to water; as the cattle are kept sheltered, during the hot months, from the great heat of the sun, and prevented from being tortured by the flies in the fields, which prove very detrimental to them.

The horses were employed this time constantly in the necessary husbandry business; sometimes in ploughing land, which is exceedingly hard and heavy, as I have before observed; and sometimes in carrying
out

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out manure upon the lands ; often sent with loads of hay and straw to the London market, and bringing back dung or soap ashes, to put upon the heavy land. During this time, the horses looked remarkably well, and were generally healthy and well, much better than they have been since they returned to be fed upon corn and hay.

This has induced me to sow a quantity of winter tares, which I expect will be ready to come into use in April : and, as I find it so beneficial, I intend also to have some acres of summer tares, to feed all my horses in the stable, the ensuing summer, as well as my cows in the farm-yard. As I cut some part last year, besides what I fed the horses and cattle with, I consider there was not above twelve acres consumed by them ; and each acre, considering the intrinsic value of the land the tares grew upon, which was some of the lowest quality of the farm, stood me in not more than thirty shillings an acre, the

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the value of the feed, ploughing, &c. included.

I am, with great respect,

MY LORD,

Your Lordship's

Most obedient servant,

THOMAS NOYES.

*Park Farm, Eltham, Kent,
Feb. 8th, 1790.*

The Rt. Hon. Lord ROMNEY.

The

The following is the Answer of Mr. NOYES to a Letter sent him by order of the Committee of Agriculture, desiring him to ascertain, if possible, the quantity of Beans and Bran consumed by the cattle during the time of Stall-feeding.

S I R,

UPON my return from my farm, near Andover in Hampshire, Saturday evening, I met the favour of yours of the 5th instant.

In answer, I beg leave to inform you, that on referring to my books, I find the quantity of Horse-beans consumed in the whole time of feeding my horses with tares, last summer, was twenty-four bushels, and ninety-six bushels of Bran.

I am, SIR,

Your obedient humble servant,

THOMAS NOYES.

*Park Farm, near Eltham,
March 8th, 1790.*

Mr. MORE.

F

The

The GOLD MEDAL, being the Premium offered for cultivating Rhubarb, was this year adjudged to Mr. JOHN BALL, of Williton, who also gained the Premium for Rhubarb last year. See Vol. 7th, page 34.

S I R,

I RECEIVED your former letters, with the Gold Medal, and the Society's seventh volume of their Transactions; for which I sincerely thank them. I deferred answering, in hopes I should have been able to have sent you a sample of some Rhubarb; but the almost continual rains have prevented me from taking them up; which has determined me on making an artificial heat: and to have all the effect of the sun, I am now building a house, in the form of a hot-house, as I am satisfied that without the benefit of the sun we cannot dry it to perfection;

fection ; for the Rhubarb which I have already dried, has been on a malt-kiln, keeping up the thermometer to 80 : but this did not answer my expectations, as I could not make it appear so fine to the eye, as I could wish. Six years since, I dried about one hundred and fifty pounds in this manner ; eighty pounds of which I sold to a druggist in Bristol for six shillings per pound, and have used no other sort of Rhubarb in my shop, and have always found it to answer in every respect. As soon as my house is in order, I intend taking up a few roots for trial ; and I will acquaint the Society with every particular of my proceedings. By the severity of the winter, about fifty of the four hundred and thirty plants which I planted last year, and for which the Society adjudged me their Gold Medal, died ; but having a quantity of young plants, the vacancies were filled up, and I have again planted, this year, upwards of six hundred at six feet apart, and about two hundred at

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four feet apart : these eight hundred I have dressed with good rotten dung, sifted coal-ashes, and lime which had been previously slacked; and mixed with a proper quantity of stuff taken from a mill-pond ; and, as the ground was very good, did not dig any pits, as before practised, but had it ploughed very deep.

I am satisfied that we grow Rhubarb equal to Turkey, but as yet have not been able to cure it to that perfection. I have taken up roots of five years old, that have weighed upwards of seventy pounds, and have now many roots only four years old, which, I believe, would weigh sixty pounds (I mean immediately on their being taken out of the ground) ; and the seed-stalks nine feet high. If you think some seeds would be acceptable to the Society, I will with pleasure send them. I have planted Rhubarb these several years ; and observing how they increase, after they become three years old, I intend
letting

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letting some of them remain in the ground six or seven years, and am of opinion it will be of a finer quality. I shall take your advice of planting some plants among the woods; and you are certainly right, respecting the bark, as I have used it for several years past for tinctures, and find it full as good, in every respect, as the best part of the root.

I am, SIR,

Your obedient humble servant,

JOHN BALL.

*Williton,
Sept. 24th, 1789.*

Mr. MORE.

S I R,

YOUR letter of December 2d I received, and according to promise have sent the Society for the Encouragement of

F 3

Arts,

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Arts, Manufactures, and Commerce, some Rhubarb seeds, and three different sorts of tinctures and powders, and a small quantity of *Radix* and *Cortex Rhabarbari*, which I beg the honour of their acceptance. I should have answered your favour before, but waited in hopes I should have been able to have sent the Society some large roots : but the continual rains have prevented its drying ; and the house, which in my last I told you I was building, was so damp that I could not place it therein ; and have now got it before a fire, the malt-kiln being in use, which I heretofore dried it on.

I have now only taken up eight roots, which were sown about five years since in a border before my house, of twenty feet by three, as a nursery-bed : but the roots prospered so well, that I let eight of them remain ; and notwithstanding they were so near each other, and on a very thin soil, they weighed one hundred and sixty pounds
when

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when taken up. This year I shall take up about forty, and, if agreeable, will send up one whole root.

I am, SIR,

Your most obedient servant,

JOHN BALL.

*Williton,
January 4th, 1790.*

MR. MORE.

S I R,

HAVING raised, in the spring of the last year, upwards of six hundred plants of the true Rhubarb, I have taken the liberty to send a Certificate, and beg the favour of you to present it to the Society for the Encouragement of Arts, Manufactures, and Commerce. Some time since, I sent you a small box, by the way of Taunton, directed to

F 4 you,

72 A G R I C U L T U R E .

you, containing the samples of Rhubarb,
and the several preparations mentioned in
the foregoing letter.

I am, SIR,

Your much-obliged

humble servant,

JOHN BALL.

Williton,
January 26th, 1790.

Mr. MORE.

THIS is to certify, That John Ball,
Surgeon in Williton, in the parish
of St. Decuman's, and county of Somerset,
hath raised, in the spring of the last year
(1789), upwards of six hundred plants of
the *Rheum Palmatum*, or true Rhubarb ;
that they stand six feet asunder each way ;
that they were in a very thriving state
during the summer, in a southern aspect,
and sandy soil ; the culture, one part good
rotten

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rotten dung, one part sifted coal-ashes, and two parts lime which had been previously slacked, and mixed with a proper quantity of mud or waste taken from a mill-pond and often turned.

(Signed)

RICHARD MORLE, jun.	} Churchwardens.
ROBERT DORE,	
JAMES WOOD,	} Overseers.
ROGER MORLE,	
JOHN WINTER,	
NICHOLAS TANNER,	
T. TANNER.	

*Williton near Watchet, Somersetshire,
January 19th, 1790.*

SIR,

S I R,

YOUR favour of the 9th inst. I received ; and, in answer to your request, I have seen and examined Mr. John Ball's plantation of the *Rheum Palmatum*, or true Rhubarb, and signed his Certificate, that they are planted at the distance of six feet each way : the number is six hundred and upwards, and were in a thriving state during the last summer.

I am, SIR,

Your very humble servant,

RICHARD MORLE.

Orchard Wyndham,
Feb. 3d, 1790.

Mr. MORE.

The

The Candidate from whom the following Letter, dated October 29th, 1789, was sent, in claim of the Premium for cultivating and curing Rhubarb, not having fully complied with the terms specified in the Society's advertisement, could not be admitted a claimant ; but the Society, in consideration of his merit, and to promote, as much as in them lies, the growth and culture of so valuable a drug, voted their SILVER MEDAL to Mr. HAYWARD, as a bounty ; whose Letters and Account are here inserted.

S I R,

HAVING been about twelve years a cultivator of the true Turkey Rhubarb, and so far succeeded as to have disposed of, and used, within the three last years, more than two hundred weight of that article ; I have the satisfaction to find it approved by
several

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several gentlemen, eminent in phyfic, and many friends of consequence, who advised me to become a Candidate for the Premium offered by the worthy Society for the Encouragement of Arts, &c. for promoting the culture of this useful drug. I have taken the liberty of sending five pounds for their inspection: should it meet their approbation, I shall be happy, if by any information I can give, in regard to the culture and cure of this valuable British production, I may have the honour of coinciding in some degree with the generous and laudable intentions of that most respectable Society.

I am, SIR,

Your humble servant,

WILLIAM HAYWARD.

Banbury,
Oct. 29th, 1789.

Mr. MORE.

THIS

THIS is to certify whom it may concern, That Mr. William Hayward, Apothecary, of Banbury, is possessed of twenty pounds weight of Rhubarb, of the same quality with the five pounds sent herewith, of his own cultivation and curing.

Witness } WILLIAM WARD,
 } JOHN CASWALL.

October 29th, 1789.

S I R,

I AM sorry my misunderstanding should have occasioned you the trouble of writing. At the same time I beg to return my best thanks to the Society for their kind indulgence, in allowing me an opportunity of correcting my error. I certainly intended to give the worthy Members the best account (in my power) in regard to the culture and cure of the Rhubarb submitted to their inspection ; but did not apprehend

such

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such information was required at the time of presenting the article.

Having, in an extensive practice for several years, used no other, I have (exclusive of prejudice in favour of my own production) found it in every respect equal to the best Turkey Rhubarb, which I used to purchase at a high price. The saving to me yearly has been very considerable; and I doubt not, but the culture of it, encouraged by your benevolent Society, will prove a very considerable saving to the nation.

I have herewith sent my method of culture and cure, and am,

SIR,

Your obliged, and
obedient humble servant,

WILLIAM HAYWARD.

Banbury,
December 3^d, 1789.

Mr. MORE.

METHOD *of cultivating* TURKEY
RHUBARB *from Seed.*

I HAVE usually sown the seed about the beginning of February, on a bed of good soil (if rather sandy, the better), exposed to an east or west aspect, in preference to the south; observing a full sun to be prejudicial to the vegetation of the seeds, and to the plants whilst young.

The seeds are best sown moderately thick (broad-cast), treading them regularly in, as is usual with parsneps and other light seeds, and then raking the ground smooth. I have sometimes, when the season has been wet, made a bed for sowing the Rhubarb seeds upon, about two feet thick, with new dung from the stable, covering it near one foot thick with good soil. The intent of this bed is not for the sake of warmth, but solely to prevent the rising of earth-worms, which,

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which, in a moist season, will frequently destroy the young crop.

If the seed is good, the plants often rise too thick ; if so, when they have attained six leaves, they should be taken carefully up (where too close), leaving the standing crop eight or ten inches apart : those taken up may be planted at the same distance, in a fresh spot of ground, in order to furnish other plantations. When the plants in general are grown to the size that cabbage-plants are usually set out for a standing crop, they are best planted where they are to remain, in beds four feet wide, one row along the middle of the bed, leaving two yards distance betwixt the plants, allowing an alley between the beds about a foot wide, for conveniency of weeding the plants.

In the autumn, when the decayed leaves are removed, if the shoveling of the alleys are thrown over the crowns of the plants, it will be found of service.

Cultivation

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Cultivation of Turkey Rhubarb by off-sets.

On taking up some plants the last spring, I slipped off several off-sets from the heads of large plants: these I set with a dibble about a foot apart, in order, if I found them thrive, to remove them into other beds. On examining them in the autumn, I was surprised to see the progress they had made, and pleased to be able to furnish my beds with forty plants in the most thriving state.

Though this was my first experiment of its kind, I do not mean to arrogate the discovery to myself, having known it recently tried by others, but without being informed of their success. I have reason to think this valuable drug will, by this method, be brought much sooner to perfection than from seed.

Method of curing Rhubarb.

The plants may be taken up either early in the spring, or in autumn when the
G leaves

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leaves are decayed, in dry weather if possible, when the roots are to be cleared from dirt, (without washing) : let them be cut into pieces, and with a sharp knife freed from the outer coat, and exposed to the sun and air for a few days, to render the outside a little dry.

In order to accelerate the curing of the largest pieces, a hole may be scooped out with a penknife : these and the smaller parts are then to be strung on packthread, and hung up in a warm room (I have always had the conveniency of such a one over a baker's oven), where it is to remain till perfectly dry. Each piece may be rendered more tightly by a common file, fixing it in a small vice during that operation : afterwards rub over it a very fine powder, which the small roots furnish in beautiful perfection, for this and every other purpose where Rhubarb is required.

The

THE GOLD MEDAL, being the Premium offered for gaining Land from the Sea, was this year adjudged to THOMAS QUAYLE, Esq. of Reading, Berks; from whom the following Account and Certificates were received.

SIR,

I BEG you will lay before the Society for the Encouragement of Arts the following particulars of an undertaking, in which I have succeeded, in gaining from the Sea one hundred and ten acres and nineteen perches of Land in Dengey Hundred, in the county of Essex.

In that neighbourhood, there exists a general tradition, that at some distant period of time, a considerable tract of country was overwhelmed by an irruption of the sea. The name of a Saxon city, *Ithan-cestre*, is preserved, which is said to have

84 AGRICULTURE.

then perished. But the memorials of this calamitous event are not so well preserved, as those of the inundation on the western side of the Thames, although it could not have been long prior in point of time, or perhaps much less extensive in its devastation. Bricks are said to be sometimes raised by the fishermen dragging off this coast; and some have fancied they could discern stumps of trees in a sand-bank called the Buxey, situate at two leagues distance from the present shore.

No apprehensions of a similar calamity are now entertained on the coast of Dengey Hundred; bounded on the east by the Black-water or Malden River, on the west by the Burnham river, and extending about fifteen miles, the sea has been, for some centuries, slowly and irregularly, but gradually retiring. The owners of the adjacent land have not neglected to avail themselves of the retreat of this formidable neighbour: sometimes in concert, but more frequently

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frequently by separate attempts, they have guarded against the return of the sea to the marsh, which it had left, by the erection of strong dykes or sea-walls.

Of their progressive advances indisputable proofs remain in the vestiges of three sea-walls, one within the other, on many neighbouring farms ; and it is not improbable that the plough has reduced to a level with the adjoining land, other walls still more ancient.

This recession of the sea, if seconded by a little industry on the part of the inhabitants, may restore to them the whole of that territory, of which they are said to have been deprived.

The natural shore of this whole district is at present composed of sand: on the greatest part of it, the water by which it is washed, is not of the purity observed on most sandy coasts, but on its approach to

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land, and for four or five miles to sea, appears discoloured by a mixture of mud or ooze. This is deposited on the shore ; and together with the sea-weed driven thither by tempests, and the shells of some species of the smaller testaceous fish, slowly accumulates, and is condensed by the heat of the sun, and the gradual discharge of the sea-water during the ebb. In the course of many years, this new soil yields some scattered marks of vegetation. The plants thus appearing, though not of much value, being principally marsh - samphire, and other coarse marine productions, have the good effect of giving cohesion to the loose soil, and enabling it to resist the waves, with which the returning tide covers it. Irregular ravines or rills are, however, ploughed up, which, as they terminate towards the sea, are shallow : nearer full-sea mark, as the land rises in height, they deepen to two or three, in a few instances to four or five feet. The intervals between these rills are very unequal ; in some places there

there is a space of twenty or thirty yards between two rills ; in other places they approach so nearly, as almost to unite. However unpleasant their appearance may be, they are essentially useful to the soil : where they are wide and deep, the land is more firm and productive, in consequence of its being more completely drained during the ebb.

At some distance from high-water mark, these rills multiplying, communicate with, and intersect each other ; the oozy earth sinks in height, and is in great part covered with salt water, even while the tide is at the lowest. Here the marine plants cease to vegetate. The new land, so far down as any continued marks of vegetation are discoverable, is called *the Saltings* ; where the shallow numerous rills converge, and the naked mud appears, it is termed *the Chatts*.

These rills, communicating with the ocean, are not the only receptacles of salt water on

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the new land: as it is of itself retentive of moisture, we find frequent pools of seawater in the middle of the Saltings. These are not improperly called the Pans; being, during the summer months, filled with stagnant and weedy water, they are very injurious both to the soil and the air.

It may be thought that, during the neap-tides at least, the sun has sufficient power to exhale the water in these pans; but the recurrence of the spring tides has generally replenished them before they were quite exhausted,

There is indeed a remedy put into practice by my tenant some years ago, to which I am indebted for the present superiority in value of my saltings, compared with those of some of my neighbours; and that is, the expedient of cutting drains from each pan to the next deep rill: the water having, by that means, an issue, the weeds and mud have hardly ever failed to fill up the pans.

Nearly

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Nearly in the centre of the level, between the Malden and Burnham Rivers, is situated my farm, which presents to the sea a front of about a mile. Visiting it in the autumn of 1787, I convinced myself of the advantage likely to result from an embankment of so extensive a tract of saltings as were attached to it. The soil without the then sea-wall, appeared to correspond in quality with that within : each had been formed in the same manner ; and the present difference between them was such as must necessarily result from the former's being drenched at every high tide with sea-water, which often covered it to the depth of several feet. A marine plant called Crab-weed, which is thought to indicate soundness and fertility of soil, grew luxuriantly ; and the ground, at a considerable distance from the wall, was firm to the foot,

Besides those general risks which attend all such undertakings, there were however two peculiar circumstances that opposed an embankment

embankment here. The first was, that a rivulet, called Asheldon Brook, taking its rise in the centre of the Hundred, and collecting all the fresh water for some miles, here discharges itself into the sea. If we ventured on an embankment, this brook must be carried through the new wall, at no slight expence. The country being a dead flat, and the due discharge of this water being therefore of the highest importance to all our neighbours, we had to dread their opposition: on collecting their sentiments, however, no impediment arose in that quarter. I had the satisfaction to find the marsh-bailiffs, under the commission of sewers for this level, well-informed and liberal-minded men; who, far from throwing any obstacles in the way of improvement, obligingly concurred in giving every aid, and every information, in their power.

With their assistance we determined on the most secure mode of constructing a wooden gutter to convey this fresh water under the intended wall.

But

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But there still remained a difficulty of a nature much more mortifying. At about two hundred yards distance from the brook, there unfortunately runs quite through the Saltings, from the old wall in a right line to the sea, a piece of low land, bottomed with perfectly liquid mud, and of the breadth of about twenty rod.

This we suppose to have been the natural channel of the brook, but that its course had been purposely diverted. Before the great accretion of land on either side, here formerly had been a creek, containing water sufficient for the navigation of small vessels. The instructions from the Board of Customs to the officer of the adjoining port of Burnham, to this day, direct him to visit *Tillingham Creek*, though it is at present so much too shallow for general use as a landing-place, that probably the name is no where preserved but in these instructions.

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This Low, as it is called, traversing the best part of our saltings, we found that, in order to avoid getting on the Chatts, we should be under the necessity of altering the direction of our wall, as it crossed the Low, so as to form an obtuse angle towards the land; and also of raising the earth for the construction of the wall at some distance, that it might not be subject to the subsidence which must be expected, if formed of the soft materials the spot itself produced.

Having determined on these means of avoiding the difficulty, our plan was at length fixed, and the direction of the proposed new wall staked out. Early in February, 1788, a contract was entered into with two companies of sea-wallers, one consisting of twenty, the other of ten men, for the erection of a new wall in front to the sea, thirty-four feet wide at the feet, eight feet high, six feet wide at the top, with a slope of two feet for every foot in height

height on the sea-side, and one foot and an half in the same space on the land-side. A ditch running parallel with the wall on the land-side, at the distance of twelve feet, was also to be sunk, twelve feet wide at the top, four feet deep, but not to exceed the width of five feet at the bottom, to prevent the fides from slipping in.

By their contract they were restricted from raising any earth whatever from the land-side of the wall (except what the ditch yielded), or from raising any within the distance of twelve feet on the sea-side. In order that more time might be given the wall to settle, it was directed not to be raised above five feet, till the whole was carried to that height, and then the other three feet to be added.

The winds from which mischief is most apprehended on this coast, are those which blow in shore from about the north-east. This made it necessary to construct the
front

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front wall of superior solidity. No great danger being apprehended from the impulse of any side-wind on the new embankment, shielded as it must be by my neighbour's uninclosed faltings, we ventured gradually to contract the width of the lateral walls, as they approached the land, from thirty-four to twenty-four feet, the height continuing the same.

For the principal wall the contractors were to receive at the rate of thirty shillings the marsh rod of twenty-one feet : for the side walls, one guinea ; they being free from the expence of barrows, scaffolding, and every other necessary and utensil, except shovels ; and claiming a recompense for filling up the deep rills, over which the wall was carried, and for extra labour in crossing the Low before spoken of. There being a space left, between the foreland of the new wall marked out and the Chatts, sufficient to afford good earth, to barrow for the wall, the work immediately commenced :

menced : sometimes above thirty wallers were employed ; at other times they fell short of this number ; but, as they worked with spirit, by the beginning of July the front wall was nearly completed, a space of about twenty-five yards being however left on each side of Asheldon Brook.

In the mean time a gutter had been cut, out of seasoned oak, for the conveyance of this brook under the wall : this was sixty feet in length, seven feet two inches wide, two feet six inches deep in the clear run, with an apron eight feet long and spread eight feet. For several days it had been the employment of eight men to prepare the spot for the reception of this gutter, by making a dam or semicircular dyke on the sea-side, five feet high, and twelve feet wide at the seat.

In passing the very channel which the fresh water had usually taken, we were obliged to construct it of still greater solidity,

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lidity, stronger indeed than the wall itself. In the seat it exceeded thirty feet, was twelve feet high, and planked and piled internally.

Another slighter dam being made on the land-side, meeting that on the sea-side, in order to keep off the fresh water from the men when laying the gutter, they first cleared away all the water from the circular internal space. The bottom being found so soft and oozy, that a ten-foot pole could, without any great effort, be struck down to the end, it was thought prudent to remove the soft earth, in the direction the gutter was to be placed, to the depth of two feet, or two feet and a half, and the width of twelve feet at the bottom. An equal quantity of the dryest earth on the Saltings was then barrowed in, and rammed down as closely as possible with a small mixture of hay : the cells nine inches square, of the length of the gutter, being then put down, thirty joists, eight inches wide and five inches thick,

thick, were dovetailed into them, and the space between the joists, and without the cells, as far as the soft earth had been removed, was closely rammed with the best earth and hay, level with the joists and cells.

The studs being next put in, the plating and the rest of the carpenter's work proceeded without any difficulty: the earth over the gutter, when finished, was rammed in the same manner as at the bottom and sides, the whole width and length of the outfall, till it was level with the Saltings, with so much care, that the men barrowing in earth employed three times their number in stowing and ramming it. The sea-wall was then carried over the gutter in the usual manner.

The hay was here made use of in a very small quantity, and merely to prevent the inconvenience arising from this tenacious earth adhering to the rammers. Piles

H driven

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driven under the gutter might at first sight appear likely to have made the foundation more solid ; but I was dissuaded from using them, as it is found by experience that piles on this bottom are subject to sink unequally. This might produce a partial depression of the gutter, and a consequent failure in the due conveyance of the water to the sea.

As the slightest error in the construction or position of this gutter might be attended with ruinous consequences, not only to ourselves, but to many upland farms, we proceeded in this operation with the greatest possible caution. The progress here made was much slower than in any other part of the work : as soon as it was finished, one gang of the men soon threw up the side-walls.

By the 9th of November the whole was completely embanked, and I had the satisfaction of seeing added to the farm one hundred and ten acres of land, which I trust will

will not be found inferior to many spots in this island in fertility.

Whilst this work was proceeding, we were fortunate in having favourable weather; but the remarkable dryness of the last year, though of service to the wall, has not been equally beneficial to the new land. To clear it from the superabundance of the marine acid, with which it is impregnated, nothing would be so effectual as a long continuance of rain. In the mean time, the vegetation of any plants, besides those which nature has suited to a soil saturated with sea-water, is not to be expected: such at least is the opinion of the most intelligent cultivators in Essex.

Different opinions and a different practice prevailing on other coasts, where recent embankments have been made, I was induced to fence off about twenty square rod, at the eastern extremity of the newly-gained saltings, in which the experiment of sowing

H 2 various

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various plants was made in the last spring : but the result has proved the opinion of the Essex farmers to be well founded, at least with regard to their own soil : no one plant has shewn itself above ground, except white mustard, and that vegetated but weakly : some wheat transplanted lived as long as it found nourishment in the mould removed with its roots ; when they struck into the salt land, every plant perished : the same ill success attended an attempt to sow the wall with ray-grass and clover. The experiments shall however be repeated on a larger scale, and with different kinds of manure.

As soon as the work was completed, one of the best wallers was engaged to reside on the farm, and be constantly on the watch, during the winter months, lest any flaw should happen in tempestuous weather : but, though the sea has every where occasionally risen to the height of four or five feet on the wall, and where it crosses the old creek,
the

the waves appear to have rolled to its very summit, no material damage has been sustained, nor any salt water got admission into the new land : where a small quantity of earth has happened to be washed from the side of the wall, this man alone immediately filled up the breach, and has also been employed in making good the foreland, where any traces of the old rills were left. Out of abundance of caution I have also directed the whole foot of the wall to be planked and piled through the Low, and a couple of small breakwaters, twelve or fourteen inches high, extending from the wall to the end of the foreland, to be added in the most exposed places : as the old planks used in the scaffolding answer for this purpose, it is done at a trivial expence.

The appearance the new land has already assumed, much exceeds every one's expectation : it is now sufficiently solid to bear a horse ; the rankest sea-weeds daily disappear ; not a drop of water stagnates upon it ; the

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earth is cracking round the rills, and beginning to fill them without any aid; and we trust that in a very few years the land will be in a state to receive the plough: it is however fitted by nature rather for pasture than arable land, and has the advantage of being so disposed, as that fresh water may be laid into every separate marsh or division.

Besides the direct benefit obtained by the acquisition of so much land, before nearly useless, and now capable of conversion to the most valuable purposes of agriculture, there result from it indirect advantages, by no means contemptible. In consequence of the subsidence of the new land, and the more perfect cleaning and deepening the sluices, the whole farm is more completely drained, and the brackish water which now fills the lower ditches of the old land will soon give way to fresh.

By this embankment we attain another important object. Our duck-decoys, to
which

which agriculture itself must in some measure be subservient, have hitherto suffered much from the molestation of persons walking on the old wall: whilst the adjoining saltings lay open, it was impossible to protect ourselves from these intruders: they may now be kept at a much greater distance.

It would be injustice, were I to assume to myself the merit (if merit there be) of this undertaking: of any peculiar ingenuity, or even industry, of my own, I cannot boast. The circumstance which led me to engage in it, was the account of Mr. Harriott's embankment, contained in the fourth volume of the Transactions of this Society. Had it not been for the information communicated to the public by the means of this truly patriotic body, it is probable I should not have thought of this work, and perhaps should never have visited the place; which, though it produces some of the best corn in

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England, is not blessed with the purest atmosphere.

It will not indeed be easy to select two objects of greater national importance, than those to which the wisdom of this Society extends its peculiar protection; the enclosure of moors, and embankments from the sea. The efforts of individuals, in converting to tillage soils before unproductive, add doubly to the riches of the State: at the same time that the general population is advanced by the employment of the husbandman on what may be termed a new creation, a surplus of food is raised for the use of the manufacturer, or for foreign consumption.

In communicating to the Society the result of an undertaking which owes its origin to them, I do but acquit myself of a duty imposed on me by every consideration of gratitude and respect. I beg leave to enclose an account of the expence attending

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tending this work, with a Certificate of the quantity of land embanked, and am respectfully,

SIR,

Your very humble servant,

THOMAS QUAYLE.

London,
30th June, 1789.

Mr. MORE.

ACCOUNT

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*ACCOUNT of Expence attending Embankment
from the Sea of one hundred and ten acres
and nineteen poles of Land, in the Parishes
of Tillingham and Dengey, in the County
of Essex, in 1788 and 1789.*

	£.	s.	d.
PAID making 315 rod and one half of sea-wall, at thirty shillings by the marsh rod of twenty-one feet -	473	5	0
55 rod, at one guinea - -	57	15	0
Paid wallers for extra labour in crossing the old creek -	10	0	0
Paid ditto for ditto in filling up the larger rills, over which the wall passed -	4	4	0
Gratuities paid them - -	2	2	0
Paid carpenter for 30 wheel- barrows used in the walling	15	15	0
Iron work in ditto - -	7	0	0
Carried over	£. 570	1	0

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Brought forward	£. 570	1	0
Paid for wooden boxes or frames, made to support the scaffolding for the wall-ers	-	-	7 2 0
Timber-merchant's bills for planks and battens used in the scaffolding	-	-	34 7 9
Carpenter's bill, for materials and workmanship, laying an oak gutter under the wall, sixty feet in length, with doors &c.	-	-	150 9 0
Paid wallers for their labour in preparing the place for the reception of the gutter, and assisting to lay the same			22 3 6
Blacksmith's bill for work about the gutter	-	-	6 6 6
Carriage of the materials of same	-	-	7 10 0
Carried over	£. 797	19	9

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Brought forward	£. 797	19	9
Paid a person for staking out the wall, overlooking and directing the whole work	29	8	0
Paid a waller for work done during the winter, in re- pairing flaws in the wall, making good the foreland, and other labour - -	9	15	0
Carpenter's bill, repairing bar- rows, and other small jobs	1	9	0
Ray-grafs and white clover- feed to sow the wall - -	1	11	0
Freight of timber from Lon- don, surveying, and other small expences - - -	3	15	0
Paid for labour in making two small breakwaters, pi- ling and planking through the Low - -	1	4	0
Paid for sinking one ditch across the new land, 33 rod at 3s. - - - -	4	19	0
Total	£. 850	0	9

I ROBERT MUNDELL, of Billericay, in the county of Essex, land-surveyor, do hereby certify, That, on the 4th and 5th days of June, 1789, I surveyed and admeasured a piece of land, adjoining to a farm called the Grange, in the several parishes of Tillingham and Dengey in the said county, embanked from the sea by Thomas Quayle, of Reading, in the county of Berks, Esq. between the 5th day of February, and the 11th day of November 1788; and that the said land so embanked contains one hundred and ten acres nineteen perches, statute measure, exclusive of the space on which the new wall, for the protection of the new enclosure from the sea, is erected, and also of a space between such wall and a trench that runs parallel therewith, at the land side of the wall for the whole extent, at the distance of twelve feet from the same. And I further certify, That the said one hundred and
ten

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ten acres and nineteen perches, so gained from the sea, are securely and substantially embanked; and that the new wall is of sufficient dimensions and strength, being, in front to the sea, thirty-four feet wide at the base, six feet wide at the top, eight feet high, and of the length of three hundred and twenty-one rods; that the wall at the east end is of the length of thirty-six rods, and that at the west end, of the length of thirty-nine rods and nine feet; in other respects, of the same dimensions as the front wall, except that they gradually contract to twenty-four feet at the base, or thereabout. And I further certify, That the said land, so newly gained from the sea by embankment, is of a fertile nature, and may, when drained, be expected to be equal in value to any land in the Hundred of Dengey.

ROBERT MUNDELL.

*Billericay,
11th June, 1789.*

We

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We the undersigned do severally attest the truth of the facts, stated in the foregoing Certificate. Dated this 15th day of June, 1789.

WILLIAM WALTHAM, Marsh Bailiff
of Burnham Level.

SAMUEL BAWTREE, Expenditor of
Burnham Level.

A. L. PEACOCKE, Curate of Tilling-
ham and Dengey.

THOMAS STUTTLE, Overseer of the
Poor at Tillingham.

RICHARD SPURGEN, Churchwarden
of ditto.

SIR,

SIR,

THE very honourable mark of approbation, with which, I learn by your letter of the 29th of December, the Society for the Encouragement of Arts have been pleased to distinguish my undertaking in Essex, has impressed me with sentiments of the most lively gratitude. No one, I beg leave to assure you, can be more truly sensible of the value of such an obligation, conferred by a body of men in every point of view so respectable. There is indeed but one reflection which gives me uneasiness, and that is, my thorough conviction how little what I have done merits an honour so much and so deservedly coveted.

So well satisfied are my neighbours with the substantiality of the new wall, and the construction of the outfall, that I understand it is in agitation to apply to the Commissioners

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missioners of Sewers for this level for their interposition to oblige me to take up the old sluice ; that is, in effect, to demolish the old wall.

I will take the liberty of adding, that from the abundance of rain of late, the new land is in the best possible state : the wheat, rye, and winter tares, which have been sown by way of experiment, had speared when I heard from thence early in December, and promised this year to succeed.

I am, SIR,

Your very obliged humble servant,

THOMAS QUAYLE.

*Reading, Berks,
2d January, 1790.*

MR. MORE.

The following Account of Land gained from the Sea, at Goldhanger, in the county of Essex, was this year received, in claim of the Premium offered; but the Gold Medal being adjudged, as before mentioned, to Thomas Quayle, Esq. the Society voted their SILVER MEDAL to Mr. LEE, of Tolesbury near Malden; from whom the following Letters, Certificates, and Plan, were received.

To the President, Vice-Presidents, and Members, of the Society for the Encouragement of Arts, Manufactures, and Commerce, Adelphi, London.

MY LORDS AND GENTLEMEN,

HAVING purchased an estate at Goldhanger in this county, part of which was a salt-marsh, containing forty-two
acres

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acres and one rood, adjoining to the river Blackwater, near its entrance into the German Ocean, and overflowed at every spring tide, I thought that a quantity of good useful land might be gained without a great hazard: in consequence of which, in February last I began enclosing the same, leaving a sufficient foreland next the sea, and with an embankment of earth only have secured thirty acres and eighteen poles.

I have had it surveyed by an experienced workman, who declares it is not likely to want any considerable expence for many years.

The whole Charge of enclosing is as follows :

	£.	s.	d.
Waller's bill, - - -	158	4	9
One gutter, 36 feet long, one			
foot clear run, - -	25	0	0
Planks, barrows, &c. - -	7	7	0
Cartage, and extras, - -	5	5	0
	<hr/>		
Carried over	£. 195	16	9

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Brought forward	£.	195	16	9
It will cost about twenty shillings per acre to level the rills,	-	-	-	30 0 0
Total expence	£.	225	16	9

The whole length of the wall is one hundred and eighty poles of eighteen feet each, the height from five to seven feet, according to the level of the soil; the seat of the bank from sixteen to twenty-two feet, and four feet wide at the top.

Finding, by the published Transactions of the Society, that you have offered rewards for gaining land from the sea, I have taken the liberty of sending the above for your consideration, and am, with great respect,

MY LORDS AND GENTLEMEN,

Your most obedient humble servant,

THOMAS LEE.

Tolstbury, Essex,
1st Sept. 1790.

Mr. MORE.

THIS is to certify, That Mr. THOMAS LEE, of Tolesbury, has since February last enclosed upwards of thirty acres of Salt-Marsh in this parish, which used to be overflowed by the sea; that the above Letter contains a true statement of the expences; and that the land is likely to turn out very valuable. Witness our hands, at Goldhanger, this first day of September, 1789,

CHARLES COWLEY, Rector,
 THOMAS PALLING, Churchwarden,
 JAMES CARTER, Overseer,
 THOMAS BECKLEY, } Inhabitants.
 JOHN ROBERTSON, }

SIR,

YOUR favour of the 23d instant was not received till this day. Be pleased to present my respectful compliments to the Society, and inform them my signature to Mr. Lee's claim was as Rector of Goldhanger, the parish in which the land was recovered from the sea ; and of which I was witness, from the commencement of the undertaking to the present time.

It appears to me to be very effectually done ; and I have not a doubt but the land in question will very shortly be as productive, as the fertile lands adjoining. With the highest respect for the Society, I am

Your very obedient servant,

CHARLES COWLEY.

*Goldhanger,
Nov. 30th, 1789.*

Mr. MORE.

SIR,

S I R,

YOUR favour of the 26th ultimo, communicating to me the vote of a Silver Medal from the Society for the Encouragement of Arts, Manufactures, and Commerce, for enclosing a Salt-Marsh at Goldhanger, I received in due course, and according to your request have enclosed a rough sketch of the Marsh I have taken in from the sea.

It might have been of great utility to the village of Goldhanger, if I had been permitted to have joined Mr. Key's wall at the place I have marked, as the tide would have been kept further from the street, and the inhabitants free from salt ditches, which are here supposed to be unhealthy; and it would also have shortened my wall full eighty poles: but the expence would have been much the same, owing to the difficulty of crossing the creek at the place I wished; however, about ten acres of land more would have been gained.

Should

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Should the enclosed sketch be insufficient for the inspection of the Society, I will transmit you one properly done by a land-surveyor, when I have the estate measured.

I am, SIR,

Your obedient humble servant,

THOMAS LEE.

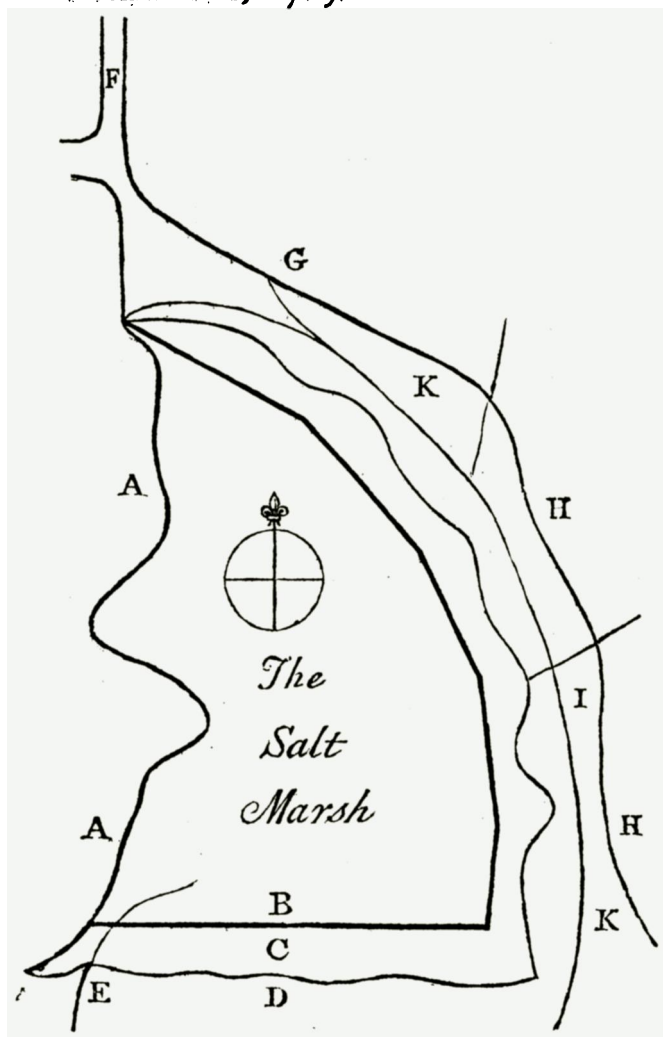
*Tolebury, near Malden,
Jan. 20th, 1790.*

Mr. MORE.

- A. Old wall of my own estate.
- B. The new wall.
- C. Foreland left next the sea.
- D. The boundary of the Saltings.
- E. Inlet.
- F. Goldhanger-street.
- G. Wall of Mr. Pigott's estate.
- H. Wall of Mr. Key's estate.
- I. The tide might have been stopped here,
if permitted.
- K. Goldhanger creek.

Sketch

Sketch of a SALT-MARSH enclosed at Goldhanger, in the County of Essex, by Thomas Lee, 1789.



The Society this year received the following Papers from Mr. LANE, of Farringdon, and Mr. MANLEY, of Topsham, in Devonshire, sent in claim of the Premium offered “ To the person who “ should have in his possession the greatest “ number of stocks of Bees, not fewer than “ thirty.” But neither of the Candidates having conformed to the terms specified in the Society’s advertisement, the premium could not be adjudged to them ; but a bounty of FIVE GUINEAS was voted to each of them, for the laudable zeal they have shewn by their endeavours to promote an object so deserving encouragement.

S I R,

HEREWITH you will receive a Certificate of John Lane having now in his possession eighteen stocks of Bees, and an affidavit made by him, that he had,
before

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before he began to burn them and take the honey, twenty-five stocks. You will also receive his account of the management of them. The man is very attentive and careful of them ; and, as far as I am a judge, understands the treatment of them thoroughly. Of this I am certain, from all the intelligence I can pick up, that he has preserved his Bees, through the whole of this dreadful summer, much better than any person in this county.

I am,

Your obedient humble servant,

JOHN B. CHOLWICH.

*Farringdon-House,
Oct. 13th, 1790.*

Mr. MORE.

Devon, to wit,

JOHAN LANE, in the parish of Farringdon, in the said county, carpenter, maketh oath, and saith, that in the beginning of the month of September last he had in his possession twenty-five stocks of Bees, being
his

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his own property ; and that he had them during the whole of the preceding summer. He further saith, that about three weeks since he burnt three of the stocks, and took the honey from them ; and that the Bees have deserted four of the other stocks : so that the number he now has in his possession is lessened to eighteen.

(Signed) JOHN LANE.

Sworn before me,
One of his Majesty's Justices of
the Peace for the said county,
this 11th day of Oct. 1789,
JOHN B. CHOLWICH.

WE, the Minister and Churchwardens of the parish of Farringdon, do certify, That we know the above John Lane, and that we do believe the contents of the above affidavit to be true ; and that he hath now eighteen stocks of Bees in his possession.

E. SPARKS, Minister.
J. B. CHOLWICH, Churchwarden.
I, JOHN

I JOHN LANE, carpenter, have been a keeper and manager of Bees upwards of twenty years, and have had good success. I provide for their maintenance as much of such things as I see they labour and delight in. My little spot of ground is well stored with fruit-trees, such as plums, pears, and apples, and also with early honeyfuckles. They delight much in the blossoms of beans and rosemary; for which reason I keep as much of those plants, as my little spot of ground will admit. I plant lilies before their houses, and having within these few years observed they delight much in the blossom of leeks, I keep a great many for their use.

For the management of them till the year 1787, I let them stand on good stakes and boards; in which manner I had great increase: for in 1787, one stock increased itself to six stocks of Bees; the old stock
 swarmed

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swarmed twice ; the first swarm swarmed twice ; the second swarm, once : but that year some ill-disposed people stole four stocks of Bees from me in one night. Since that time I have therefore erected three houses ; in which I can enclose, and keep under locks, thirty stocks of Bees. My front rank stands about fourteen feet from the turnpike road ; the hinder rank, about twenty-one feet from the road. In the summer of 1788 my little winged treasure did over and above fill my houses ; for I had thirty-three stocks of Bees.

When they swarm, I carefully provide for them reed butts or hives of a good size, holding about three pecks of corn ; for they do not thrive well, when they have not good room to work and breed in : when they have good room, they generally cast large swarms. I have two in my garden of this year's swarming, that I was obliged to raise on lis-foms nine inches high, that they might have room to work ; for they filled the hive down

to

to the brim, and beyond. I keep a register of their age ; for I never take the honey from a hive of Bees under two years old : for the honey is richer and solider, and will keep better ; for I have kept honey three years, and as sweet at last as it was at first.

This year, 1789, in September, I had twenty-five stocks of Bees, all my own property : but the spring and summer, this year, have been very bad for them. I have been informed, that in many different places the Bees are almost all dead, and very few have swarmed ; for the weather has been so wet, that the very few that are alive, are very badly supplied with food. Some have applied to me to know how to preserve them, for they fear they will not live ; and I have given them an account, that when I have a late swarm, or a light old stock, I take them into my infirmary, or feeding-house, where they cannot get out, nor any others come to them. I then take honey, or, if honey be scarce, coarse sugar will do very well,
mixed

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mixed up with middle beer; it must not be too thick: then take a piece of clean old comb; lay it flat on a plate; and spread the comb all over, till the holes are filled with the honey, or sugar prepared as above mentioned: then raise the hive, and shut the plate in, under it, and the mixture will soon be all carried up into the cells. And so I continue to feed them, till they are brought to such a state as I think proper.

I cannot hold with robbing them; and I have an account from Dr. Salter, a man of good ability, who says he cannot find a better way to preserve his stock, than by stifling with brimstone such stocks as he intends to take the honey from: for very often, and for the most part, the greedy robber takes so much from them, that they must starve; which is more cruel than a speedy death: or else the greedy robber must return back with shame what he so greedily took from them, or lose his stock. And I think there are more stocks of Bees
lost

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lost by robbing them, than by killing them; but if they should happen to live, they are very weak in the spring.

For my own part, I observe to keep them dry and clean, and provide every thing I see necessary for them, and endeavour to do them all the charitable acts I possibly can.

If I should be thought, by the Gentlemen of the London Society, to be worthy their notice, I shall be truly humble and thankful.

I am

Your dutiful and humble servant,

and faithful friend to Bees,

JOHN LANE.

Farringdon,
Oct. 19th, 1789.

To the Society for Encouragement of Arts, &c.

THIS

K

THIS is to certify, That I, SIMON MANLEY, of Topsham, in the county of Devon, Plaisterer and Tyler, have in my possession twenty-one stocks of Bees, and that they have been in my possession during the preceding summer.

The manner of my treating them, and the place I keep them in, are as follow. They are kept in a garden, fifty-six feet by twenty-four feet ; and in the garden are different sorts of herbs and flowers, situated about thirty yards from a salt-water river. Twice a year I lift the hives, and clean them out with a goose's wing, or a brush (I mean the stands) ; and in the summer time I stop the holes with a piece of lead, full of small holes, leaving one large enough for a single Bee to go in and out, the remainder being to give them air ; and the Bees that guard the door, prevent the wasps and other vermin (which are plenty in that season) from

from entering. In the winter time, for fear the hard weather should hurt them, I carry them up to a room, which I keep for that purpose; and when there, put a tobacco-pipe in the large hole to prevent their coming out; and, if necessary, in the garden, and feed them that want it; my method of doing which is this: In the latter end of September, or beginning of October, I take about six pounds of honey to one quart of water, and dissolve it over a slow fire; then let it cool, and pour it out into a large pewter dish, and cover it over with writing-paper, and with a large pin prick it full of small holes. The paper swims upon the honey. I then put the pewter dish upon a stand, where the Bees are: afterwards I get a smooth board, with which I cover over the pewter dish: in the board I make a square hole, of about six or eight inches, for the Bees to go down: I then take the hive that wants feeding, and put it upon the board under which the dish is, and stop the hole with a tobacco-pipe, that the other Bees may not go in,

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and disturb them. The next day I examine them, to see whether they have carried it up into their cells ; which in general they do, leaving but very little, and sometimes none. After that, I take the dish away, and put them on their stands ; and if they want it again, I do the same in March or April.

My method of taking the honey is thus : I never destroy the old stock of Bees ; but, after lifting them to examine what honey there is, if I think the hive is full, I put another under that hive with a flat top ; and in the middle of the top, a square hole. I take an opportunity, when the Bees are down from the top hive, to run a shutter, which is of wood, into the hole at the top ; and that prevents them from going into the top hive ; and then I take the top hive, and put it in a bucket, top under, or bottom upwards ; and then take a little rod, and strike the butt or hive, till I think they are all out ; and then they go home to the under hive which I left.

We,

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We, the Minister and Churchwardens of the parish of Topsham, in the county of Devon, do hereby certify, That the above account is true, to the best of our knowledge and belief.

(Signed)

JOHN CARRINTON, Minister.

JOHN HILL,
LEWIS BEXFORD, jun. } Churchwardens.

SAMUEL CLARK, Overseer.

To the Gentlemen of the
Society for the Encou-
ragement of Arts, &c.

Topsham,
Oct. 15th, 1789.

SIR,

I HAD the honour of receiving your favour of the 17th inst. In answer I beg leave to inform the Committee of Agriculture, that I had, this season, twenty-four

K 3 butts ;

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butts ; and the reason they were diminished, being under the unavoidable necessity of attending my business : while wanting, they swarmed and flew away ; and I could not get any intelligence of them afterwards. I have many times had, for some years, from thirty to forty butts ; and have kept them from that quantity to twenty butts these forty years past.

For fear I have not sufficiently explained my management respecting the honey, I have got hives on purpose, some of them flat, and some round ; and when I do not wish to have them swarm, I put the flat hive under, with a round board on the top ; and in that board a square hole, with a slider : and in the same hive I have got a small door, with small hinges ; and inside, a glass ; and in the season I open the door, and look through the glass, to see whether the combs are down in the hive, and filled with honey ; and if they are, I shut the slider, and take off the top hive, and leave
the

the under one for the stock (so that I lose none, except by the severity of the winter) : and many times, after taking off the first, and leaving the under, I put another which likewise I have often had filled, and then I take off the top one again. The time I generally take them off, is the latter end of June, or beginning of July, and at any time of the day.

My method of doing it is : I carry it into my court, and set it on a bucket, with the crown or top downwards, and take another empty hive, and put on it, for fear the Queen Bee should be in it ; and then with a stick I strike the under hive, till the Bees are all gone up into the empty butt, and carry them into my garden, nigh the hive I took them from ; and they soon return to their old habitation : so that I never destroy my Bees.

I have not taken any honey this season, owing to the lateness of the spring, and the

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continual rainy weather we have had. I dare say I might have done it ; but did not, for fear I should lose the hives of Bees.

I think few are more particular about them than myself. I have before now taken the Queen Bee, while they were in the act of swarming, put her in a clear bottle, and kept her from the swarm a full hour, and carried and shewn her to several gentlemen ; and the swarm continuing hovering about the garden, and not settled the whole time. When I brought her home, I have laid her on a floor in a kitchen window ; and being moist by her own breath in the bottle, when I took her out she licked herself clean ; and being quite recovered, I carried her out upon the hive where she swarmed from : a little time afterwards, about a handful of her subjects found her out, and seemed much rejoiced at finding her. From thence she arose up, and pitched on a currant-bush ; and the remaining part of the swarm came to her,
and

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and settled at once ; and I hived them very well.

Being but a poor man, I hope the Gentlemen will take my claim into consideration ; and am,

SIR,

Your very humble servant,

SIMON MANLEY.

Topsham,
Nov. 22d, 1789.

Mr. MORE.

E R R A T A.

Page 33, line 5 from the bottom, for *cure* read *procure*.

41, line 7, after the word *longest* add an asterisk.